

REMARKS

In accordance with the foregoing, claim 15 has been cancelled and claims 11 and 12 have been amended. Claims 1-14 are pending and under consideration. No new matter has been presented.

CLAIM OBJECTION

On page 5 of the Action the Examiner objected to claims 11-15 and these claims have been amended in view of the Examiner's comments.

REJECTIONS UNDER 35 U.S.C., § 101

Claim 15 is rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. Claim 15 has been cancelled.

REJECTIONS UNDER 35 U.S.C. § 103

Claims 1, 4, 6, 9, and 11-15 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Gao (U.S. Patent No. 6,449,590) in view of Ozawa (U.S. Patent No. 5,487,128) and further in view of Laflamme et al. ("16 Kbps Wideband Speech Coding Technique Based on Algebraic CELP," 1991).

Claim 1 recites, among other elements, "a first fixed codebook retrieving unit, which obtains a first fixed codebook index that can express the first fixed codebook target signal most properly, and a first fixed codebook gain value, generates a first fixed codebook contribution signal corresponding to the retrieved index, and outputs a difference between the first generated fixed codebook contribution signal and the first fixed codebook target signal as a second fixed codebook target signal; a second fixed codebook retrieving unit, which includes at least two second fixed codebooks according to a speech characteristic, selects a second fixed codebook according to the speech characteristic, and retrieves second fixed codebook index that can express the second fixed codebook target signal most properly, and second fixed codebook gain values..."(emphasis added).

Gao merely discloses a speech encoder comprising an adaptive codebook and a fixed codebook having multiple subcodebooks,

Further, Ozawa merely discusses a first codebook and second codebook.

However, Ozawa fails to discuss "an adaptive codebook retrieving unit..." as recited in claim 1.

In addition, Laflamme et al. discusses "however, few studies have attempted to apply CELP to the context of wideband speech. The main drawback of CELP is its gross computational complexity. As the sampling frequency is doubled, larger frame sizes are needed to maintain a low bit rate transmission. Consequently, the user of much larger excitation codebooks becomes

inevitable. For instance if we assume the same proportion bit rates and block lengths, the typical codebook size increases from a thousand entries (10bits) to a million entries (20 bits). Searching and string such a codebook size is rather impractical, unless some suboptimal approaches are utilized such multistage codebooks, or a split-band approach. From the above, discussion, it seems that it is impossible to use a full band approach for CELP coding of sideband speech. (see chapter 1 of Laflamme et al.-emphasis added).

Thus, Laflamme et al. teaches away to use a full band approach for CELP coding.

Accordingly, it is further respectfully submitted that the combination of Gao, Ozawa, and Laflamme et al. does not disclose or suggest that the features as recited in claim 1 for the above-discussed reasons.

Further, Gao discusses using two codebooks, an adaptive codebook and a fixed codebook. Ozawa also discusses using two codebooks, a first fixed codebook and a second fixed codebook. Neither reference teaches or suggests using three codebooks; adaptive, first fixed and second fixed as called for in claim 1. The third codebook allows for improved performance over the two codebook approaches of Gao and Ozawa. Withdrawal of the rejection for this further reason is requested.

In line with the above, the present invention of claim 1 produces three signals that are combined. At most, Gao and Ozawa discuss producing two signals. Withdrawal of the rejection for this reason is requested.

Additionally, Gao says nothing at all about using two fixed codebooks. Ozawa says nothing about using an adaptive codebook. The Examiner has combined a system that uses an adaptive codebook and a fixed codebook with a system that uses two fixed codebooks when neither of the references suggest that such a combination is possible or even desirable. The Examiner appears to be using hindsight in making the combination. Withdrawal of the rejection for this additional reason is requested.

In addition, claim 4 is patentable due at least to its depending from claim 1, as well as for the additional recitations therein.

In addition, claims 6 and 9 are patentable due at least to the same or similar rationale as claims 1 and 6, respectively, as well as for the additional recitations therein.

Claims 11 and 12 are patentable due at least to the similar rationale as claim 1, as well as for the additional recitations therein.

Claims 2-3, and 7-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gao (U.S. Patent No. 6,449,590) in view of Ozawa (U.S. Patent No. 5,487,128) and further in view of

Laflamme et al. ("16Kbps Wideband Speech Coding Technique Based on Algebraic CELP," 1991) and yet further in view of Chhatwal et al. (U.S. Patent No. 5,457, 783).

Claim 2 recites "wherein the second fixed codebook is composed of an algebraic codebook and a random codebook, and the second fixed codebook retrieving unit retrieves the random codebook in fricative sound or affricate section and retrieves the algebraic codebook in other sections."

However, Chhatwal et al. discusses "One solution to this problem would be to use a traditional random codebook based on noise-like waveforms in parallel with the bi-pulse codebook so that the bi-pulse codebook was used when it modeled the signal best, while the random codebook was used to model the certain types of unvoiced speech for which it was most appropriate. However, the disadvantage of this approach is that, as mentioned before, the random codebook is much more difficult to search than the bi-pulse codebook. The ideal solution would be to take the bi-pulse codebook vectors and transform them in some way such that they produced noise-like waveforms. Such an operation has the additional constraint that the transformation be easy to compute since this computation will be done many times in each frame." (col. 13, lines 50-63).

It is respectfully submitted that the combination of Gao, Ozawa, Laflamme et al., and Schhatwal et al., does not teach or suggest the invention as recited in claim 2, since Schhatwal et al. teaches away to use both bi-pulse codebook and random codebook.

In addition, claim 3 is patentable due at least to similar rationale as claim 1, as well as for the additional recitations therein.

Claims 7 and 8 are patentable due at least to similar rationale as claims 2 and 3, respectively, as well as for the additional recitations therein.

Claims 5 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gao in view of Ozawa and further in view of Laflamme et al. and yet further in view of Westerlund et al. (U.S. Patent No. 6,757,654).

Amended claim 5 recites "wherein the second fixed codebook gain values include a second standardized fixed codebook gain value and a ratio of the second standardized fixed codebook gain value and gain values of other second fixed codebooks."

However, Westerlund et al. discusses "the predictor could be updated based on energy changes present between frames. The encoder module could measure the distribution (e.g., ratio) between the LTP gain and the algebraic gain and send it with very few bit." (col. 21, lines 35-38).

As noted above, Westerlund et al. discusses the distribution between the LTP gain and the algebraic gain.

However, Weserlund et al. fails to disclose "wherein the second fixed codebook gain values include a second standardized fixed codebook gain value and a ratio of the second standardized fixed codebook gain value and gain values of other second fixed codebooks."

Thus, it is respectfully submitted that that the combination of Gao, Ozawa, Laflamme et al., and Westerlund et al. does not teach or suggest the invention as recited in claim 5.

Claim 10 is patentable due at least to the similar or the same rationale as claim 5, as well as for the additional recitations therein.

There being no further outstanding objections or rejections, it is submitted that the application is in condition for allowance. An early action to that effect is courteously solicited.

Finally, if there are any formal matters remaining after this response, the Examiner is requested to telephone the undersigned to attend to these matters.

CONCLUSION


If there are any formal matters remaining after this response, the Examiner is requested to telephone the undersigned to attend to these matters.

If there are any additional fees associated with filing of this Amendment, please charge the same to our Deposit Account No. 19-3935.

Respectfully submitted,

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